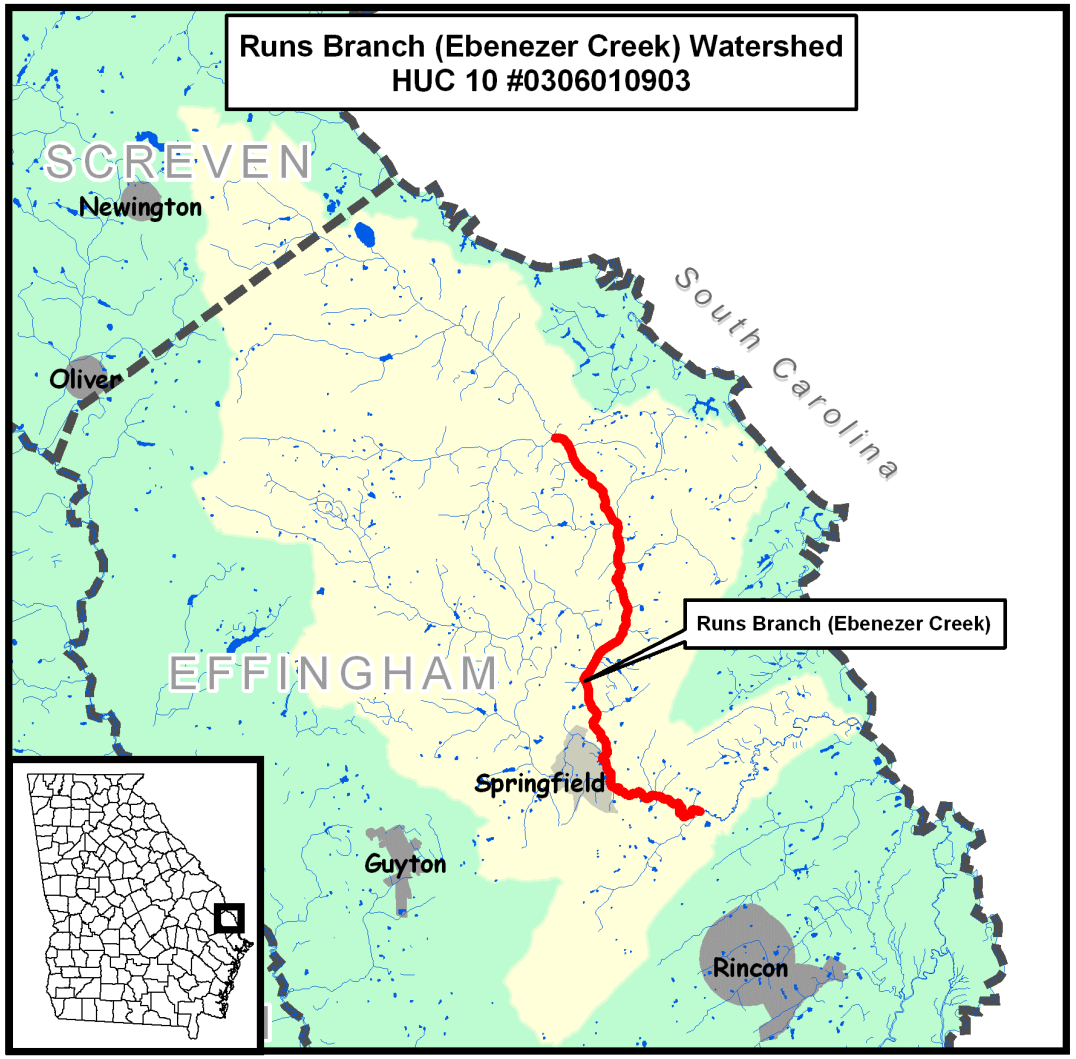
STATE OF GEORGIA
TIER 2 TMDL Implementation Plan (Revision # 1)
Segment Name: Runs Branch (Ebenezer Creek) Watershed
Date: June 15, 2007
River Basin: Savannah River Basin
Local Watershed Governments: Effingham County, City of Springfield



I. INTRODUCTION

Total Maximum Daily Load (TMDL) Implementation Plans are platforms for evaluating and tracking water quality protection and restoration. These plans have been designed to accommodate continual updates and revisions as new conditions and information warrant. In addition, field verification of watershed characteristics and listing data has been built into the preparation of the plans. The overall goal of the plans is to define a set of actions that will help achieve water quality standards in the state of Georgia.

This implementation plan addresses the general characteristics of the watershed, the sources of pollution, stakeholders and public involvement, and education/outreach activities. In addition, the plan describes regulatory and voluntary practices/control actions (Best Management Practices, or BMPs) to reduce pollutants, milestone schedules to show development of the BMPs (*measurable milestones*), and a monitoring plan to determine BMP effectiveness.

Table 1. IMPAIRED SEGMENTS IN THE HUC 10 WATERSHED

IMPAIRED SEGMENT	IMPAIRED SEGMENT LOCATION	EXTENT (mi/ac)	CRITERIA VIOLATED	EVALUATION
Ebenezer Creek*	Long Bridge to Savannah River near Springfield	6 miles	pH*	Not Supporting
Runs Branch (Ebenezer Creek)*	Cowpen Creek to Little Ebenezer Creek near Clyo	11 miles	Dissolved Oxygen*	Not Supporting
Runs Branch				

(Ebenezer Creek)	Cowpen Creek to Little Ebenezer Creek near Clyo	11 miles	Fecal coliform	Not Supporting

* Plan to be done by EPD

II. GENERAL INFORMATION ABOUT THE HUC 10 AND THE SPECIFIC SEGMENT WATERSHED

Following is a review of watershed characteristics including its size and location, political jurisdictions, physical features, land uses, and identified potential sources of pollutants that could cause or contribute to violations of water quality standards addressed in this TMDL Implementation Plan. New conditions or changes in information contained in the previous TMDL Implementation Plan should be in **bold** and underlined.

Runs Branch *(Ebenezer Creek) is an 11-mile stream segment located in the Lower Savannah River Watershed (HUC 03060109) that begins at Little Ebenezer Creek and flows north through unincorporated Effingham County where it passes through the City of Springfield until it joins with Cowpen Creek (near Clyo). Runs Branch has a beneficial water use classification of fishing and is currently listed as an impaired water body as not supporting this use.*

According to the 2005 EPA Total Maximum Daily Load Evaluation for Thirty-two Stream Segments in the Savannah River Basin for Fecal Coliform, the total land coverage in the stream segment watershed is 119,783 acres (coverage determined using data from the National Land Cover Dataset for Georgia and developed from Landsat Thematic Mapper Digital Images produced in 1995), and the land use categories include the following:

- *51,354 acres, or 42.9% of forest lands;*
- *33,657 acres, or 28.1% of woody wetlands;*
- *24,687 acres, or 20.6% of agriculture lands (row crop);*
- *5,394 acres, or 4.5% of lands described as transitional lands;*
- *3,300 acres, or 2.8% of pasture lands; and*
- *1.1%, or 1,400 acres are comprised of open water, residential uses, commercial/industrial uses, barren land, other grasses (urban, recreational), and emergent herbaceous wetlands.*

Effingham County's comprehensive plan is under development at the writing of this plan. The community assessment includes an existing land use map for unincorporated Effingham County. This map was produced using data from 2003 and aerial photos from 2004. The largest land use within the county is agriculture, defined as land dedicated to farming (fields, lots, pastures, farmsteads, specialty farms, livestock production, etc.), agriculture, or commercial timber or pulpwood harvesting. Agricultural use includes 3,645 parcels that contain 193,463.07 acres, of 65% of the county's total acreage.

III. CAUSES AND SOURCES OF SEGMENT IMPAIRMENT(S) LISTED IN TMDLs

Table 2 provides information contained in the current TMDL for the impaired water body. This includes the name and location of the impaired segment, the water quality criteria violated, and the wasteload and load allocations determined in the TMDL. Potential sources described in the TMDL may include domestic treatment facilities (M), industrial treatment facilities (I), urban runoff and sources (UR), and other nonpoint or unknown (NP) sources. By definition, "wasteload allocations" (WLA) are established for municipal and industrial treatment facilities and storm water discharges in permitted areas (WLAsw), while "load allocations" (LA) are established for nonpoint sources. **Wasteload allocations are assigned by EPD during the NPDES permitting process. They are not part of EPD's TMDL implementation planning process, which deals solely with non-point sources of pollutants.**

Table 2. WASTE LOAD AND LOAD ALLOCATIONS AND TMDLS FOR THE IMPAIRED SEGMENT

STREAM SEGMENT NAME	LOCATION	CRITERIA VIOLATED	WLA	WLAsw	LA	TMDL
Runs Branch	Cowpen Creek to Little Ebenezer Creek near Clyo, Effingham County	Fecal Coliform	N/A	N/A	1.86E+13	2.06E+13

Table 3 also contains information presented in the TMDLs that this plan is designed to address. This includes the criteria responsible for the impairment(s), the specific water quality standard(s) violated, potential sources/causes of impairment, and the needed reduction in source loads estimated in the TMDL.

Table 3. SOURCES OF IMPAIRMENT INDICATED IN THE TMDLs

CRITERIA VIOLATED	WQ STANDARD	SOURCES OF IMPAIRMENT	NEEDED % REDUCTION (FROM THE TMDL)
Fecal Coliform Bacteria (FC)	1,000 per 100 ml (geometric mean Nov-April) 200 per 100 ml (geometric mean May-Oct)	Nonpoint Sources: Wildlife Agricultural Livestock • Animal Grazing • Animal Access to Stream • Application of Manure to pastureland and cropland Urban Development • Leaking sanitary sewer lines • Septic system failures • Land Application Systems • Landfills	27 percent

IV. IDENTIFICATION AND RANKING OF POTENTIAL SOURCES OF IMPAIRMENT

This section identifies and describes, in order of importance, the extent and relative contributions from sources of pollutants listed in Table 2 and identified through this TMDL implementation planning process. This description includes information presented in the current TMDL or TMDL implementation plan and/or collected during the TMDL implementation planning process that either verifies or alters estimates of contributions from the sources listed in the TMDL and repeated in Table 2.

In the Nonpoint Source Assessment, the 2005 EPA TMDL lists three potential sources of impairments: wildlife, agricultural livestock, and urban development. Visual field surveys were conducted on February 26, 2007 to evaluate the stream condition and the presence of any of these potential sources of impairments. **Wildlife**: Open areas with less dense tree canopy and ponds with low flow were observed. These areas are prime habitat for migrating waterfowl. **Agricultural**: Observations of segments of Turkey Branch – a tributary of Runs Branch – revealed fences within the riparian zone in poor condition, which would allow livestock access to the stream. Within the segment watershed, there are extensive signs of agricultural activity, most likely contributed to row crops since there are no registered confined animal feeding operations within Effingham County. The application of manure/litter to cropland and pastureland is not practiced by the farmers in the watershed and thus has been eliminated as a potential nonpoint source contributor in this plan. **Urban Development:** Aerial photos provided by Georgia EPD show that the buffers are predominantly intact along the impaired stream segment, with the adjacent land coverage along the length of the corridor showing very little signs of disturbance or development at this time. However, pollution from urban sources could increase. The Effingham County Joint Comprehensive Plan designates the subject area as an “Area Requiring Special Attention”, which means it is at risk of rapid development that outpaces the ability of local governments to provide services. Runs Branch is also listed as an area requiring special attention as a natural resource that is at risk of being negatively impacted by development.

Table 4 ranks potential sources of water quality impairments in order of importance as determined through this TMDL implementation planning process. A "rating scale" of 0.5 to 5 has been developed for this activity. "Rating A" is an estimate of the geographic extent of each potential nonpoint source as a percentage of the contributing watershed area, percent of stream miles affected, or number of acres. "Rating B" is an estimate of the relative contribution from each major source of the pollutant causing the impairment. The overall relative "Impact Ratings" for each source is calculated by multiplying Rating A by Rating B.

The following table provides guidance for rating the estimated extent (Rating A) and portion of the contribution (Rating B) from each potential source and cause.

Rating A: Estimated Geographic Extent of the Source or Cause in the Contributing Watershed	**Rating B:** Estimated Portion of Contribution from the Source to the Pollutant Load Causing the Impairment	**Rating**
None or negligible (approximately 0-5%)	None or negligible (approximately 0-5%)	0.5
Scattered or low (approximately 5-20%)	Scattered or low (approximately 5-20%)	1
Medium (approximately 20-50%)	Medium (approximately 20-50%)	3
Widespread or high (approximately 50% or more)	Widespread or high (approximately 50% or more)	5
Unknown	Unknown	UNK

Comments on the source of information used to determine the extent or contribution are entered in the applicable columns in Table 4. Appropriate management actions (i.e. watershed assessments, increased water quality monitoring, etc.) are suggested where available information is deemed inadequate to estimate the extent and relative contribution of significant potential sources.

Table 4. EVALUATION OF POTENTIAL SOURCES OF STREAM SEGMENT IMPAIRMENT

CRITERION: Fecal Coliform

POTENTIAL SOURCES	**ESTIMATED EXTENT OF CONTRIBUTION**		**ESTIMATED PORTION OF CONTRIBUTION**		***IMPACT RATING (A X B)***
	Comments	***Rating (A)***	**Comments**	***Rating (B)***	
Wildlife	Throughout watershed.	3	Deer, ducks, wild hogs, beavers, etc., reported in watershed.	1	3
Septic System failures	Scattered. Residential land comprises a very low portion (0.6%) of the total area of the Runs Branch watershed; however, the area containing the watershed is regarded as a potential rapid development area that would be most likely served by septic systems.	1	Most residential development is occurring in the unincorporated county and municipal water and wastewater treatment services are limited.	1	1
Animal Access to Stream	Scattered (Turkey Branch)	.5	Only observed in tributary, not actual stream segment	.5	.25

Land Application Systems	Low. Waters near City of Springfield	.5	Low; flows regulated by permit	.5	.25
Human Impact	Throughout watershed.	1	At almost every bridge crossing of Runs Branch, there was evidence of human impact – debris in streams, including larger items such as toilets, washer/dryer. Deer carcasses dumped in or near streams. "Party spots" included burnt trash heaps.	1	1

V. STAKEHOLDERS

Public involvement through the stakeholder process is a vital component of TMDL implementation planning. Stakeholders with local knowledge can provide valuable information regarding their communities, impaired waters, potential sources of impairments, and BMPs that might be employed to improve water quality. This section describes outreach activities engaging local stakeholders in the TMDL implementation plan preparation process, including the number of attendees, meeting dates, and major findings, and recommendations.

The first stakeholder meeting was announced through public notice published twice in the local newspaper, the Effingham Herald, as well as through invitation letters addressed to a group of 23 initially identified stakeholders that included local officials, members of the Natural Resources Conservation Service, environmental and special interest groups, and representatives from the Coastal Health district. The meeting will be held on Thursday, May 24, 2007, from 6:00-8:00 p.m. at the Effingham County Administration Annex, 601 North Laurel Street in Springfield.

There were 10 people in attendance at the first meeting that included members of the Advisory Group, local concerned citizens, and some property owners within the segment watershed.

Additional meetings will be scheduled in August.

Following is a list of advisory committee or watershed group members who participated in this TMDL implementation planning process.

Table 5. STAKEHOLDER ADVISORY GROUP MEMBERS

NAME/ORG	ADDRESS	CITY	STATE	ZIP	PHONE	E-MAIL
Tom Joyner GSWCC	151 Langston Chapel Rd	Statesboro	GA	30458	912-681-5241	tjoyner@gaswcc.org
Rahn Milligan GSWCC	151 Langston Chapel Rd	Statesboro	GA	30458	912-681-5241	rmilligan@gaswcc.org
Glyn Thrift NRCS	151 Langston Chapel Rd	Statesboro	GA	30458	912-871-2600	glyn.thrift@ga.usda.gov

Gene Oliver RC&D	185 Richard Davis Dr, Suite 201	Richmond Hill	GA	31324	912-459-2070	gene.oliver@ga.usda.gov
Austin Blackburn NRCS	216 Mims Rd	Sylvania	GA	30567	912-564-2207	austin.blackburn@ga.usda.gov
Jason Gatch NRCS	151 Langston Chapel Rd	Statesboro	GA	30458	912-871-2600	jason.gatch@ga.usda.gov

Major stakeholders in the watershed are listed in Appendix A.

VI. MANAGEMENT MEASURES AND ACTIVITIES

Table 6A identifies significant BMPs that either have been or may be implemented in the future to address sources of impairment. The BMPs are in Column 1, organization responsible for implementation in Column 2, description of the measure(s) in Column 3, and sources of funding or other resources in Column 4. Column 5 contains one of the following status codes: (A) installed and active; (AE) active and will be enhanced or expanded; (R) required by law, regulation or permit conditions; (P) currently proposed, but not required; (NR) new recommendation; or (NE) enhanced existing recommendation. Column 6 shows the approximate date when the measure has or will be implemented. Column 7 contains an "extent" rating for the BMP or the percentage of individual sources to which the BMP has or will be applied (see the following table). Column 8 is an estimated BMP "effectiveness" rating that may be either provided by local experts or derived from technical guidance information. The following table provides guidance for rating the estimated management measure "extent" and "effectiveness" of each significant potential source.

BMP Extent (Percentage of Sources to Which the BMP Has or Will Be Applied)	**BMP Effectiveness** (Percent Removal of Pollutant by the BMP)	**Rating**
None or negligible (approximately 0-5%)	None or negligible (approximately 0-5%)	.5
Scattered or low (approximately 5-20%)	Low to medium (approximately 5-25%)	1
Medium (approximately 20-50%)	Medium to High (approximately 25-75%)	3
Widespread or high (approximately 50% or more)	High (approximately 75% or more)	5
Unknown	Unknown	UNK

Table 6A. MANAGEMENT MEASURES AND ACTIVITIES

GENERAL AND SPECIFIC MEASURES APPLICABLE TO All CRITERIA

BEST MANAGEMENT PRACTICE (1)	RESPONSIBILITY (2)	DESCRIPTION (3)	SOURCES OF FUNDING & RESOURCES (4)	STATUS CODE (5)	TARGET DATE (6)	EXTENT RATING (7)	EFFECT. RATING (8)
Federal Clean Water Act, Section 305(b) and 303(d)	USEPA, Georgia DNR/EPD, Local/County	The congressional objective of the CWA "is to restore and maintain the chemical, physical, and biological integrity of the	Federal, State	A	1972	3	3

	Government	Nation's waters." Section 305 (the *National Water Quality Inventory*) requires states to report progress in restoring impaired waters to EPA on a biennial basis. Section 303(d) requires states to identify 'impaired' waters, submit a list to EPA every two years, and develop TMDLs for these waters.					
Georgia Water Quality Control Act (OCGA 12-5-20)	Georgia Department of Natural Resources Environmental Protection Division	Makes it unlawful to discharge excessive pollutants (sediments, nutrients, pesticides, animal wastes, etc.) into waters of the State in amounts harmful to public health, safety, or welfare, or to animals, birds, or aquatic life or the physical destruction of stream habitats.	State	A	1964	1	UNK
Georgia Planning Act, Part 5	Local/County Government	Coordinated Planning Program, managed by Georgia DCA, assigns local governments Environmental Planning Criteria (set by Georgia DNR) to include in local long-term comprehensive plans: • Water Supply Watersheds • Groundwater • Wetlands • Protected Rivers • Protected Mountains Program also requires local governments to identify Developments of Regional Impact (DRI) and develop plans to protect and manage Regional Impact Resources (RIR).	Local/County Governments Impact Fees (proposed amendments are under review)	AE	1992	1	
Georgia River Basin Management Planning Act, Georgia Code Section 12-5-521	Georgia DNR/EPD	River Basin Management Plans describe strategies and measures necessary for local governments, businesses, and citizen groups to educate the general public on matters involving the environmental and ecological concerns specific to the river basin; improve water quality and reduce pollution at the source; improve aquatic habitat and reestablish native species of fish; restore and protect wildlife habitat; and provide recreational benefits.	State, Local/County Government	A	2001 Savannah River Basin	UNK	
Georgia Erosion & Sedimentation Control Act, Construction Permit, 2003 Amendment	Local/County Government, Georgia DNR/EPD, Georgia Soil & Water Conservation Commission	Local/county government certified by Georgia EPD as Local Issuing Authority for land-disturbing activities. Requires Erosion & Sedimentation Control Plan incorporating best management practices plus "Qualified Personnel" Training and Certification Program adopted from Georgia Soil & Water Conservation Commission.	State, Local/County Government	A	2003	UNK	1

		Certification of on-site "Qualified Personnel" to ensure proper design, construction and maintenance of standard E & S control measures and storm water management practices.					
Construction Storm Water Discharge NPDES Permit	Georgia DNR/EPD, Effingham County	General storm water discharge permit for stand-alone construction sites; infrastructure projects; and common developments. Requires implementation of Erosion, Sedimentation and Pollution Control Plan plus monitoring of discharge for compliance with Georgia's in-stream water quality standards.	State	A	UNK	1	1
New Development Ordinance Revisions	Local/County Government	Review current local Erosion & Sediment Control ordinances and modify as appropriate. Include requirements for professionals involved in erosion and sediment control design and construction to be certified by the county. Require pollution prevention at the construction site through preparation of Erosion, Sedimentation & Pollution Control Plan to address issues such as trash, construction debris, leaking vehicles, storage of chemicals, etc. Subdivision ordinances addressing channel protection and conservation will provide further guidelines for construction activities.	Local/County Government	A	UNK	UNK	1
Regulation of On-Site Sewage Management Systems, IAW O.C.G.A. 290-5-26	Georgia DHR, County Board of Health	Rules and regulations for installation and repair of on-site sewage management systems.	State, County Board of Health	A	UNK	UNK	1
Section 319(h) Nonpoint Source Implementation Grant	Georgia Environmental Protection Division	Funds distributed through a competitive process to public agencies, regional development centers, State colleges and universities, and State agencies. Eligible projects include TMDL or Watershed Management Plan Implementation, BMP Demonstrations, and Information and Education.	Federal and State Cost Share Program. Recipient must provide 40% match.	A	1987	UNK	3
Federal Farm Bill (Swampbuster Ag)	United States Department of Agriculture / National Resources Conservation Services	Prohibits landowners participating in federal price support programs from converting forested wetlands to agriculture.	Federal	A	1985	UNK	UNK

Water Bank Act	United States Department of Agriculture / National Resources Conservation Services	To preserve, restore and improve wetlands of the Nation and thereby to conserve surface waters to preserve and improve habitat for migratory waterfowl and other wildlife resources to retire lands not in agricultural production to enhance the natural beauty of the landscape and to promote comprehensive and total water management planning.10-year contracts with landowners to preserve wetlands and retire adjoining agricultural lands.	Federal Annual payments may be made to participating owners, and the costs of conservation measures may be shared. Total annual payments to owners were limited to $10 million in any year.	A	1970 Amended 1980 and 1984	UNK	UNK
Georgia Best Management Practices	Georgia Department of Agriculture / Georgia Environmental Protection Division for enforcement action.	Informs those involved in the agricultural business of effective practices to minimize nonpoint source pollution.	State	A	UNK	UNK	UNK
Georgia Rules and Regulations for Water Quality Control Chapter 391-3-6-.20 &. 21	Georgia Department of Agriculture / Georgia Environmental Protection Division for enforcement action.	Outlines the Swine and non-swine Feeding Operation Permit Requirements for Concentrated Animal Feeding Operations (CAFOs) with more than 300 animal units. CAFOs of more than 300 but equal to or less than 1000 animal units receive a land application system (LAS) permit. Larger CAFOs with more than 1000 but less than 3000 must obtain an NPDES permit from EPD.		A	2005	UNK	UNK
National Pollutant Discharge Elimination System (NPDES) Permit Regulations for CAFOS (40 CFR Part 122 & 412)	Environmental Protection Agency and Georgia Environmental Protection Division	Permitting program created under the Clean Water Act to protect and improve water quality by regulating Concentrated Animal Feeding Operations (CAFOs) and providing minimum permit requirements for CAFOs of more than 1000 animal units.	Federal and State	A	2006	.5	UNK
Chapter 40-13-8 Animal Manure Handlers Rules of Georgia Department of Agriculture Animal Industry Division	Georgia Department of Agriculture	This requires that persons engaged in removing animal manure from livestock/poultry production areas, transporting animal manure on public roadways, or depositing animal manure to a premise other than its point of origin obtain a permit and follow rules to control animal disease, and outlines regulations for transportation, equipment and storage.	State	A	2003	.5	UNK
Farm Bill 2002	United States Department of	Enhances long-term quality of our environment and conservation of our	Federal Cost-Share and Incentive Programs.	A	202	UNK	UNK

	Agriculture / National Resources Conservation Services	natural resources. This bill provides several opportunities for receiving grants to improve water quality.					
Conservation of Private Grazing Land Program	United States Department of Agriculture / National Resources Conservation Services	This technical assistance will offer opportunities for: better grazing land management; projects for improving water quality include: protecting soil from erosive wind and water; conserving water; providing habitat for wildlife; sustaining forage and grazing plants.	Federal (Farm Bill 2002) This is not a Cost-Share Program.	A	2002	.5	UNK
Conservation Security Program (CSP)	Natural Resources Conservation Services	This is the first program that rewards farmers and ranchers for high levels of environmental stewardship. Producers on cropland, orchards, vineyards, pasture and range may apply for CSP regardless of size, type of operation, or crops produced. Land in other cost share programs is not eligible. An enhancement example is to install a riparian buffer.	Federal (Farm Bill 2002) Cost Share There is three tiers of involvement, which result in different expectations and cost share opportunities.	A	2002	UNK	UNK
Environmental Quality Incentives Program (EQIP)	Natural Resources Conservation Services	Voluntary program that provides technical and cost share assistance for protection of ground and surface water, erosion control, air quality, wildlife habitat, and plant health.	Federal (Farm Bill 2002) 50% cost share with possible additional incentive payments	A	2002	UNK	UNK
Wetlands Reserve Program (WRP)	Natural Resources Conservation Services	Provides technical and financial assistance to landowners to enhance degraded wetlands degraded by farming or draining. There are three options with WRP to receive funds that have differing time agreements and easements resulting in different cost share. In all programs participants control access to the land, may lease or use land for hunting, fishing, and other passive recreational activities. Compatible uses are allowed as long as the do not degrade the wetland.	Federal (Farm Bill 2002) Cost Share 1. Permanent Easement :Pays appraised value of land ($2,000/ acre cap) and 100% of costs of restoration. 2. 30-Year Easement: Pays 75% of appraised value of land and 75% of restoration costs. 3. Restoration Cost Share Agreement: Pays 75% of restoration costs, no easement on the property.	A	2002	UNK	UNK
Conservation Reserve Program (CRP)	Natural Resources Conservation Services / USDA Farm Services Agency	Provides technical assistance, rental payments and cost share funding to address specific natural resource concerns including: protection if ground and surface waters, soil erosion and wildlife habitat. Eligible practices include tree planting, grassed waterways, wildlife habitat buffers, and shallow water area for wildlife and filter strips.	Federal Annual rental payment for land taken out of production and 50% cost share for practice installation.	A	1986	UNK	UNK
GSWCC BMP Manual for	State/Local/Private landowners	Manual provides the agriculture community with knowledge of the best management	State/local	A	2007	UNK (Possibly	UNK

Georgia Agriculture		practices (BMPs) that work to protect surface water quality as well as to help agency personnel educate farmers about BMPs and their usefulness. It is a compilation of conservation practices that address surface water quality and includes an estimate of the effectiveness and relative cost of each BMP.				high)	

GENERAL AND SPECIFIC MEASURES APPLICABLE TO FECAL COLIFORM.

BEST MANAGEMENT PRACTICE (1)	RESPONSIBILITY (2)	DESCRIPTION (3)	SOURCES OF FUNDING & RESOURCES (4)	STATUS CODE (5)	TARGET DATE (6)	EXTENT RATING (7)	EFFECT. RATING (8)
GSWCC BMP Manual for Georgia Agriculture	State/Local/Private landowners	Manual provides the agriculture community with knowledge of the best management practices (BMPs) that work to protect surface water quality as well as to help agency personnel educate farmers about BMPs and their usefulness. It is a compilation of conservation practices that address surface water quality and includes an estimate of the effectiveness and relative cost of each BMP.	State/local	A	2007	UNK (Possibly high)	UNK
Limit Stream Access from Pasture Animals	Private landowners/State/ Local	Turkey Branch, a tributary to Ebenezer Creek experiences encroachment from pasture animals. It was included on the 2006 305(b)/303(d) list. There are remnants of fencing in the riparian zone.	State (319 program)	NR	2010	UNK	
Proper management of septic systems	Local/private landowners	Identify and develop database of septic systems within Effingham County. Create a schedule (at least every 5 years) requiring maintenance and inspection of septic tanks and drainfields. CGRDC has developed model ordinances for maintenance and inspection of onsite septic disposal systems (OSDS).	State (319 program), Coastal Incentive Grant (CIG)	NR	UNK	UNK	UNK
Adopt Post-construction Stormwater Management Regulations	Local	Post-construction stormwater management would set standards for managing stormwater at build-out, requiring rates that are as close to, or equal to those of pre-development	Local	NR	TBD	UNK	UNK
Adopt River Corridor Protection Ordinance	Local	Adopt provisions to protect the 100 foot setback starting from top of river bank to limit development within the buffer of the Savannah and Ogeechee Rivers.	Local	NR	2008	UNK	UNK
Section 319(h) Nonpoint Source Implementation Grant	Georgia Environmental Protection Division	Funds distributed through a competitive process to public agencies, regional development centers, State colleges and universities, and State agencies. Eligible projects include TMDL or Watershed Management Plan Implementation, BMP Demonstrations, and Information and	Federal and State Cost Share Program. Recipient must provide 40% match.	A	1987	UNK	UNK

		Education.					
Commercial Waste Transporter Law (12-15-21); Regulation of Commercial Waste Originators, Pumpers, Transporters, Processors, and Disposal Facilities (391-3-6-.24)	State, (Pollution Prevention Assistance Division), Local, DHR	Provide minimum uniform statewide regulations for the purpose of regulating transporters that collect and/or dispose of commercial waste; to prevent the improper disposal of commercial wastes; to provide a commercial waste transporter permit that is accepted statewide; and to provide for fees for the cost of permitting and inspecting transporter vehicles.	State, local	A	2005	UNK	UNK

Work Sheet for Table 6B is designed to evaluate the capacity of existing, proposed, or pending BMPs to achieve nonpoint source load reductions specified in the TMDL as well as other BMPs that might be implemented to further reduce pollutant loadings from significant sources. This approach is intended to provide a usable local guide to adopt BMPs for achieving water quality goals, establishing priorities for grant or loan programs, and identifying priorities for local watershed assessments and protection plans.

Columns 1 and 2 contain significant potential sources and their corresponding impact ratings (from Table 3). Column 3 lists significant BMPs applicable to each significant source (from Table 6A). Column 4 is a very brief "evaluation summary", developed in conjunction with local stakeholders, of whether existing or proposed BMPs will achieve load reductions identified in the TMDL. Column 5 contains a summary of additional information needed to further determine significant sources and their relative contributions, and could contain recommendations for water quality monitoring, watershed assessments, or additional data acquisition. If current or proposed management measures are judged inadequate to achieve the load reductions for significant sources identified in the TMDL, additional management measures that could effectively reduce pollutant loads should be listed in "Additional Information / Measures Needed" (Column 5) and included as new enhanced existing recommendations (NE) or new recommendations (NR) under "Status Code (5)" in Table 6B and under "Milestones" (Table 9).

Work Sheet for Table 6B. EVALUATION OF GENERAL AND SPECIFIC MANAGEMENT MEASURES AND ACTIVITIES APPLICABLE TO EACH CRITERION

APPLICABLE TO CRITERION FECAL COLIFORM

SIGNIFICANT POTENTIAL SOURCES (1) (From Table 3)	**IMPACT RATING (2)** (From Table 3)	**APPLICABLE BMPs (3)** (From Table 6A)	**EVALUATION SUMMARY (4)**	**ADDITIONAL INFORMATION / MEASURES NEEDED (5)**
Wildlife	3	Wild hog, beaver management	Reducing wild hog population could possibly reduce fecal coliform loads and allow for natural buffer and wetlands restoration to occur. Use of Clemson Pond Levelers to reduce flooding has been used instead of killing beaver.	Educate hunters and property owners on the risks of dumping animal carcasses in streams

Septic System Failures	1	*Regulation of On-Site Sewage Management Systems, IAW O.C.G.A. 290-5-26*	Ensures that system design and installation guidelines are met; however, system malfunctions may not be corrected for long periods of time	Develop county-wide inventory for maintenance scheduling and adopt ordinances that require pump-outs at least every five years.
Animal Access to Stream	.25	Several NRCS sponsored measures. BMP Demonstration projects funded through 319 program.	Many could be applicable to provide education and assistance for fencing to prevent stream access and buffer restoration.	Determine overall extent through watershed assessment and protection plan.
Land Application Systems	.25	State permits		
Human Impact	1	Commercial Waste Transporter Law (12-15-21)	Illegal pumping (emptying) of waste transport trucks (septic sludge, fats, oils, and grease) into the rural streams and creeks may not necessarily be a practice in Effingham County, but local officials should ensure that the applicable state laws are followed and establish local ordinances if needed.	Incorporate local regulations similar to the state regulations for commercial waste haulers. Establish no dumping signs at bridge crossings

Table 6B identifies new enhancements to existing measures (NE) or new recommended measures (NR) that could improve or supplement current or proposed management measures listed in Table 6A, where current and required measures have been judged inadequate for achieving the load reductions from significant sources identified in the TMDL. After further evaluation generated in the Work Sheet for Table 6B, the additional management measures proposed in Table 6B have been determined more effective in reducing pollutant loads from the most likely sources of impairment. The BMPs are listed in Column 1, organization responsible for implementation in Column 2, description of the measure(s) in Column 3, and sources of funding or other resources in Column 4. Column 5 contains one of the following status codes: (NE) enhanced existing measure or (NR) new recommended measure. Column 6 shows the approximate date when the measure has or will be implemented. Column 7 contains an "extent" rating for the BMP or the percentage of individual sources to which the BMP could be applied (see the following table). Column 8 is an estimated BMP "effectiveness" rating that may be either provided by local experts or derived from technical guidance information. The following table provides guidance for rating the estimated management measure "extent" and "effectiveness" of each significant potential source.

BMP Extent (Percentage of Sources to Which the BMP Has or Will Be Applied)	**BMP Effectiveness** (Percent Removal of Pollutant by the BMP)	**Rating**
None or negligible (approximately 0-5%)	None or negligible (approximately 0-5%)	.5
Scattered or low (approximately 5-20%)	Low to medium (approximately 5-25%)	1
Medium (approximately 20-50%)	Medium to High (approximately 25-75%)	3
Widespread or high (approximately 50% or more)	High (approximately 75% or more)	5
Unknown	Unknown	UNK

Table 6B. RECOMMENDED ADDITIONAL MANAGEMENT MEASURES AND ACTIVITIES TO ACHIEVE LOAD REDUCTIONS (COMPILED FROM TABLE 6A AND COLUMN 5 IN WORK SHEET FOR TABLE 6B)

APPLICABLE TO CRITERION FECAL COLIFORM BACTERIA

BEST MANAGEMENT PRACTICE (1)	RESPONSIBILITY (2)	DESCRIPTION (3)	SOURCES OF FUNDING & RESOURCES (4)	STATUS CODE (5)	TARGET DATE (6)	EXTENT RATING (7)	EFFECT. RATING (8)
Outreach – Education – Publication	State, RDC, local, NRCS, County Extension Service	Develop program to educate hunters and property owners to discourage the placement (illegal dumping) of animal (both wild game and domestic) carcasses in or near bodies of water, specifically streams on the 305(b)/303(d) list. Publication in Georgia Outdoor News, Georgia Outdoor News Network, local paper.	State, Federal, local	NR	2010	UNK	UNK
Coastal Supplement to the Georgia Stormwater Management Manual (GSMM).	EDP, CRD, Center for Watershed Protection, Savannah-Chatham County MPC	Consequently, the GSMM does not specifically address many of the physiographic features (e.g. flat terrain, shallow groundwater), and water quality concerns (e.g. nitrogen, bacteria) of the coast. The State has decided to develop the Coastal Stormwater Supplement (CSS) to provide stormwater management guidance that is better adapted to the coastal zone.	State	NE	2007	UNK	UNK
Wild Hog Management Assistance	USDA Wildlife Services (Athens)	Developed programs to reduce or eliminate localized wild hog populations.	State, local	NR	2010	UNK	UNK
Landowner education and Fencing to prevent stream access from domestic animals	NRCS, local, private landowners	Animal access to stream was observed in the Runs Branch watershed.	State, local, 319 funds	NR	2008 (applied for funding)	5	UNK
Develop Runs Branch Watershed Assessment and Protection Plan	Effingham County, state, CGRDC	Provide an up-to-date assessment of conditions in the watershed. May also help to update and verify success of the TMDL Implementation Plan.	State, local	NR	2009	5	UNK

VII. MONITORING PLAN

Water quality monitoring serves several purposes, including obtaining data to determine sources of pollution, supporting management decisions, describing baseline conditions, and evaluating the effects of management measures on water quality. This section describes parameters to be monitored, status, whether monitoring is required for watershed assessments or storm water permits, and the intended purpose. Submittal of a Sampling and Quality Assurance Plan (SQAP) for EPD approval is mandatory if monitoring data is to be used in support of listing decisions.

Water quality data used to evaluate the criteria violated are less than five years old? Yes [**X**] No [ ].

Table 7. MONITORING PLAN

PARAMETER (S) TO BE MONITORED	RESPONSIBLE ENTITY	STATUS (CURRENT, PROPOSED, OR RECOMMENDED)	TIME FRAME		PURPOSE (If for listing assessment, date of SQAP submission)
			START	END	
Fecal Coliform	EPD, USGS	Current	Every 5 years		Ongoing monitoring for listing, delisting or impaired streams
Multiple	Effingham County, CGRDC, other regional organization	Proposed	2008	2017	Obtain SQAP approval to perform monitoring in order to support/revise the Implementation Plan and listing/delisting purposes.

VIII. PLANNED OUTREACH FOR IMPLEMENTATION

Table 8 lists and describes outreach activities that will be conducted to support this implementation plan, or help to improve water quality in the segment watershed. Identify either the projected start date or completion date. At a minimum, this is to include all education/outreach activities defined in the contractual Scope of Work for TMDL Implementation Plan development or revisions.

Table 8. PLANNED OUTREACH FOR IMPLEMENTATION

RESPONSIBILTY	DESCRIPTION	AUDIENCE	START OR COMOPLETION DATE
CGRDC, Effingham County, NRCS, stakeholders	Identify sources of funding for BMP demonstration projects (319 program)	Private property owners, local government officials	Proposed
CGRDC, Effingham County Board of Education	Develop outreach program concerning stream cleanup efforts to be used as volunteer credits for graduation.	Board of Education, teachers, students and parents of the local school system	Proposed

Effingham County/Citizens of Effingham County	Revive Adopt-A-Stream Program. Efforts to raise public awareness about water quality to enlist the public support and action in monitoring and protecting water resources.	Concerned residents	Proposed
Effingham County, CGRDC	Obtain a SQAP and submit water quality sample results to EPD.	EPD, local	Proposed
State, CGRDC, local, NRCS, County Extension Service	Education on the potential adverse impacts that the dumping of animal carcasses in water bodies may have on water quality. Develop brochures to be distributed. Education in the schools.	Hunters, land owners, concerned citizens	Proposed

IX. MILESTONES AND MEASURES OF PROGESS FOR BEST MANAGEMENT PRACTICES (BMPs) AND OUTREACH

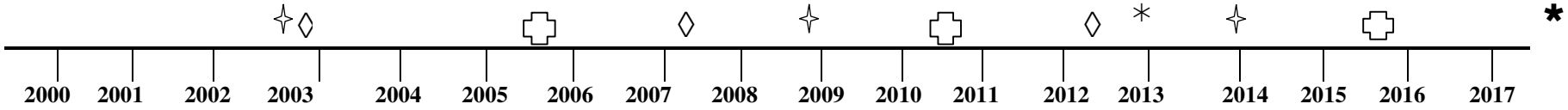
Table 9 tracks and reports progress of significant management measures identified in Tables 6A, 6B, and other sections of this plan, including outreach, additional monitoring and assessments, and enhancement or installation of BMPs. Significant activities and the target dates of accomplishment are listed under STATUS, and comments are provided on the effectiveness of the management measure, the degree of community support, what was learned, how the measure might be improved in the future, and other pertinent observations.

Table 9. MILESTONES AND MEASURES OF PROGRESS

BEST MANAGEMENT PRACTICE	RESPONSIBLE ORGANIZATION	STATUS		COMMENT
		PROPOSED	INSTALLED	
Obtain local/regional SQAP	Effingham County, CGRDC	2008		Ensure that monitoring samples would be approved by EPD for listing/delisting purposes.
Install Fencing to eliminate livestock access to stream and restore buffers	NRCS, Effingham County, landowners			Develop project application so that funding would be for a basin-wide (Lower Savannah River Basin) BMP demonstration (if determined feasible)
Develop Runs Branch Watershed Assessment and Protection Plan	Effingham County, CGRDC, State	2010		Assessment would provide more current data for the watershed and identify improper land use practices that may contribute to stream impairments.

PROJECTED ATTAINMENT DATE

The projected date to attain and maintain water quality standards in this watershed is 10 years from receipt of this TMDL Implementation Plan by Georgia EPD.



✧ Projected EPD Basin Group Monitoring
New TMDLs Completed

◊ Revised or Updated TMDL Implementation Plan Received by EPD

✚ Evaluation of Implementation Plan/water Quality Improvement

✳ Project Attainment for Plans Prepared in 2002

✱ Project Attainment for Plans Prepared in 2007

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Date Submitted to EPD:	June 15, 2007			Revision:	

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APPENDIX A. STAKEHOLDERS

List the names, addresses, telephone numbers, and e-mail addresses for local governments, agricultural or commercial forestry organizations, significant landholders, businesses and industries, and local organizations, including environmental groups and individuals, with a major interest in this watershed.

NAME/ORGANIZATION	ADDRESS	CITY	ST	ZIP	PHONE	E-MAIL
Verna Phillips Effingham County Commission Chairperson	601 North Laurel St.	Springfield	GA	31329	912-754-2123	
Edward Williams Effingham County Administrator	601 North Laurel St.	Springfield	GA	31329	912-754-2111	
Barton Alderman Mayor, City of Springfield	P.O. Box 1	Springfield	GA	31329	912-754-6666	
Darrell O'Neal Effingham Co. Environmental Health	802 Hwy. 119 South	Springfield	GA	31329		
William Tyson Effingham County Coop Extension Service	P.O. Box 308	Springfield	GA	31329		wtyson@uga.edu
Gene Oliver Coastal Georgia RC&D	185 Richard Davis Dr Suite 201	Richmond Hill	GA	31324	912-459-2070	gene.oliver@ga.usda.gov
Jimmie Harris Central Savannah River RC&D	3456 D Peach Orchard Rd	Augusta	GA	30906		Jimmie.Harris@ga.usda.gov
Willard Fell Georgia Forestry Commission	18899 US Hwy 301 North	Statesboro	GA	30461		wfell@gfc.state.ga.us
Patty McIntosh The Georgia Conservancy	428 Bull Street	Savannah	GA	31401		pmcintosh@gaconservancy.org
Frank Carl Savannah Riverkeeper	1226 River Ridge Rd	Augusta	GA	30909		Frank.Carl@savannahRiverkeeper.org
Jim Darby Coastal Chapter, GA Sierra Club	East 37th Street	Savannah	GA	31404		coastalgroup@bellsouth.net
Jo Hickson SE Watershed Forum	3601 Abercorn Street	Savannah	GA	31405		jh@southeastwaterforum.org
Dave Kyler Center for a Sustainable Coast	221 Mallory Street Suite B	St. Simons Island	GA	31522		susdev@gate.net
Glyn Thrift NRCS	151 Langston Chapel Rd	Statesboro	GA	30458		glyn.thrift@ga.usda.gov
Dallas Rhodes GSU, Dept. of Geology/Geography	1110 Herty Building, Herty Drive	Statesboro	GA	30460		DRhodes@GeorgiaSouthern.edu
Myra Lewis CGRDC Board Member	2430 Sand Hill Road	Guyton	GA	31312	912-754-2123	myinfoline@planters.net

NAME/ORGANIZATION	ADDRESS	CITY	ST	ZIP	PHONE	E-MAIL
Ken Lee Mayor, City of Rincon/CGRDC Board	P. O. Box 232	Rincon	GA	31326	912-826-5745	klee@cityofrincon.com
Charles M. Branch NRCS Springfield Service Center	403 North Pine St	Springfield	GA	31329	912-754-3812	
Thomas Joyner GSWCC	151 Langston Chapel Rd Suite 700	Statesboro	GA	30458	912-681-5241	tjoyner@gaswcc.org
Austin Blackburn NRCS	216 Mims Road	Sylvania	GA	30467	912-564-2207	austin.blackburn@ga.usda.gov
Rahn Milligan GSWCC	151 Langston Chapel Rd	Statesboro	GA	30458	912-681-5241	rmilligan@gaswcc.gov
Jason Gatch NRCS	151 Langston Chapel Rd	Statesboro	GA	30458	912-871-2600	jason.gatch@ga.usda.gov
Chris Conner GSWCC	P.O. Box 375	Springfield	GA	31329	912-681-5241	cconner@gaswcc.org
Steve Liotta Effingham County	601 N. Laurel St.	Springfield	GA	31329	912-754-8016	sliotta@effinghamcounty.org
Rebecca Stephen NRCS	403 North Pine St	Springfield	GA	31329	912-754-3812	rebecca.stehpens@ga.usda.gov
Trace Munter, Rincon WPC Superintendent	P. O. Box 232	Rincon	GA	31326	912-210-6228	
Steve Morgan, Landowner	168 Rubin Sam rd	Clyo	GA	31303	912-754-6948	
Wendell Arnsdorff Ogeechee River SWCC District	P. O. Box 949	Springfield	GA	31329	912-754-7003	

APPENDIX B. UPDATES TO THIS PLAN

If this is a major or minor revision of an existing plan, this section will describe the date, section or table updated, and a summary of what was changed and why. Georgia EPD has developed guidelines for revising existing TMDL implementation plans.

This is a new TMDL Implementation Plan.

APPENDIX C. FIELD SURVEYS, NOTES, PHOTOGRAPHS, AND MAPS.

Runs Branch at Logs Landing Road Bridge.

Structures installed to slow stormwater flows adjacent to roadbeds.

Low levels near the Logs Landing Road site (West of the Bridge).

Low levels near the Logs Landing Road site (East of the Bridge).

Bank undercutting in the stream facing east of the Logs Landing Bridge.

Bank undercutting facing west of the Logs Landing Bridge.

Toilet and debris in stream near Stillwell Road Bridge.

Washer/dryer, other debris, and oily sheen near Sister Ferry Road Bridge.

Evidence of party spot under SR 119 Bridge.

Deer carcass at SR 119 Bridge.

Very slow flow, algae, and debris south of Clyo-Shawnee Road Bridge.

Very slow flow – stream forms a pool north of Clyo-Shawnee Road

Overall, there was not much presence of urban development within the entire segment. There were two visible residential units located near the stream at the Logs Landing Road location. The segment at the Stillwell Road Bridge is located upstream of what appears to be an old wastewater pond, but overall the buffer looked good. Other than debris in the stream, the tea-colored stream displayed a medium flow and normal surface free from sheen. The segment at the SR 119 Bridge appears to be a local party spot, with considerable amounts of trash scattered near the stream and trash heaps that were burned. To the east of the SR 119 Bridge, there are natural ditches or drainage channels that continually flowed from an uphill direction to the stream. Sister Ferry Road is turns into a dirt road approaching the bridge. A considerable amount of trash was located in the stream, and the stream displayed a slow flow with a slick, oily surface. Defacing of the bridge with graffiti appears to be a popular activity at this location. At the Clyo-Shawnee Road site, the stream had an extremely slow flow that created a pool, or small pond, on the north side of the bridge.

Turkey Branch, a tributary to Runs Branch, experienced access from livestock from a nearby farm. The stream contained worn fencing that provided little prevention of limiting animal access. This segment is also included on the 2006 305(b)/303(d) list for low dissolved oxygen and not supporting the use of fishing. There appeared to be some sediment in the stream, as the water had a muddy appearance. There was also duckweed and hydrilla present in the stream.